

# Must Remain On Site

## Joining BlazeMaster 2000 CPVC Fire Sprinkler Pipe and Fittings with Red One Step Solvent Cement

### CUTTING

BlazeMaster pipe can be easily cut with a ratchet cutter, wheel-type plastic tubing cutter, a power saw, or a fine toothed saw. To ensure the pipe is cut square, a miter box must be used when using a saw. Cutting the pipe as square as possible provides the surface of the pipe with a maximum bonding area. If any indication of damage or cracking is evident at the pipe end, cut off at least two (2) inches beyond any visible crack.

### DEBURRING

Burrs and filings can prevent proper contact between pipe and fitting during assembly, and must be removed from the outside and the inside of the pipe. A chamfering tool or file are suitable for this purpose. A slight bevel shall be placed at the end of the pipe to ease entry of the pipe into the socket and minimize the chances of wiping solvent cement from the fitting.

### FITTING PREPARATION

Using a clean dry rag, wipe loose dirt and moisture from the fitting socket and pipe end. Moisture can slow the cure time and at this stage of assembly, excessive water can reduce joint strength. Check the fit of the pipe and fitting. The pipe should enter the fitting socket easily 1/4 to 3/4 of the way. At this stage, the pipe should not bottom out in the socket.

### SOLVENT CEMENT APPLICATION

Joining surfaces shall be penetrated and softened. Cement must be provided with the pipe and fittings. Cement shall be applied (worked into pipe) with an applicator 1/2 the size of the pipe diameter. Apply a heavy, even coat of cement to the outside pipe end. Apply a medium coat to the fitting socket. Pipe sizes 1-1/4 inches and above shall always receive a second cement application on the pipe end (apply cement on the pipe end, in the fitting socket, and on the pipe again).

Special care shall be exercised when assembling BlazeMaster systems in extremely low temperatures (below 40°F) or extremely high temperatures (above 100°F). Extra set time shall be allowed in colder temperatures. When cementing pipe and fittings in extremely cold temperatures, make certain that the cement has not "gelled". Gelled cement must be discarded. In extremely hot temperatures, make sure both surfaces to be joined are still wet with cement when putting them together.

### ASSEMBLY

Immediately insert the pipe into the fitting socket, while rotating the pipe 1/4 turn. Properly align the fitting for the installation at this time. Pipe must bottom to the stop. Hold assembly for 10 to 15 seconds to ensure initial bonding. A bead of cement should be evident around the pipe and fitting juncture. If this bead is not continuous around the socket shoulder, it may indicate that insufficient cement was applied. If insufficient cement is applied, discard the fitting and begin again. Cement in excess of the bead can be wiped off with a rag. Care should be exercised when installing sprinkler heads. Sprinkler head fittings shall be allowed to cure for a minimum of 30 minutes prior to installing the sprinkler head. When installing sprinkler heads be sure to anchor or hold the sprinkler adapter fitting securely to avoid rotating the pipe in previously cemented connection. Previously cemented fittings shall also be permitted to cure for a minimum of 30 minutes.

### SAFETY AND HEALTH PRECAUTIONS

Prior to using CPVC solvent cements, review and follow all precautions found on the container labels, material safety data sheet, and Standard Practice for Safe Handling ASTM F402-88.

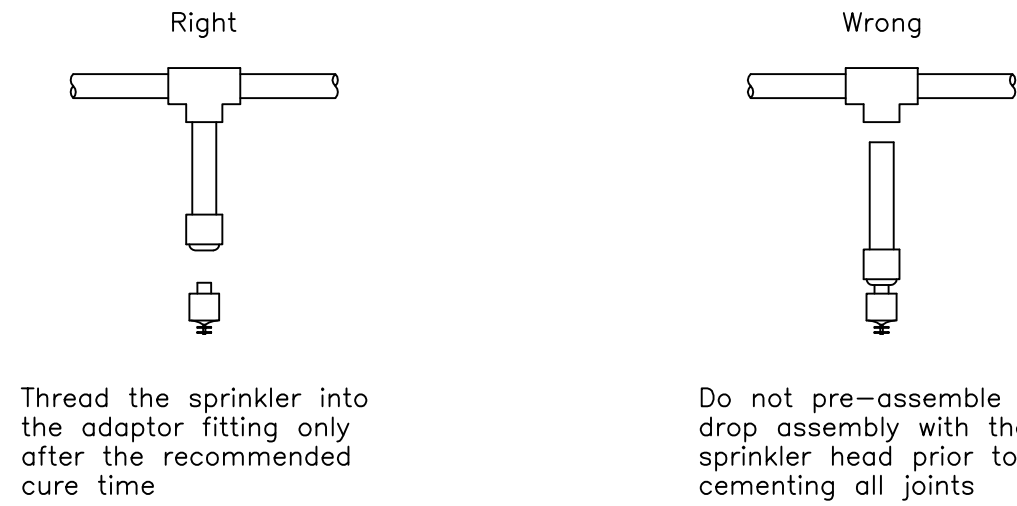
### SET AND CURE TIMES

Solvent cement set and cure times are a function of pipe size, temperature, relative humidity, and tightness of fit. Drying time is faster for drier environments, smaller pipe sizes, high temperatures, and tighter fits. The assembly must be allowed to set, without any stress on the joint, for 1 to 5 minutes, depending on the pipe size and temperature. Following the initial set period, the assembly can be handled carefully avoiding significant stresses to the joint. Refer to the cure time tables for minimum cure times prior to pressure testing.

Once an installation is completed and cured, per the appropriate table, the system should be tested at 200 psi for 2 hours, or at 50 psi in excess of the maximum pressure when the maximum pressure to be maintained in the system is in excess of 150 psi, in accordance with the requirements established by NFPA 13. Sprinkler systems in one and two family dwellings and mobile homes may be tested at line pressure in accordance with the requirements established by NFPA 13D. When pressure testing, the sprinkler system shall be filled with water and air bled from the highest and farthest sprinkler head before test pressure is applied. Air or compressed gas should never be used for pressure testing. If a leak is found, the fitting must be cut out and discarded. A new section can be installed using couplings or a union. Unions should be used in accessible area only.

### WARNING

Sprinkler heads shall be installed only after all the CPVC pipe and fittings, including the sprinkler head adapters, are solvent welded to the piping and allowed to cure for a minimum of 30 minutes. Sprinkler head fittings should be visually inspected and probed with a wooden dowel to insure that the water way and threads are clear of any excess cement. Once the installation is complete and cured, per the appropriate table, the system shall be hydrostatically tested. It is an unacceptable practice to thread the sprinkler head into the adapter fitting prior to cementing the adapter to the drop.

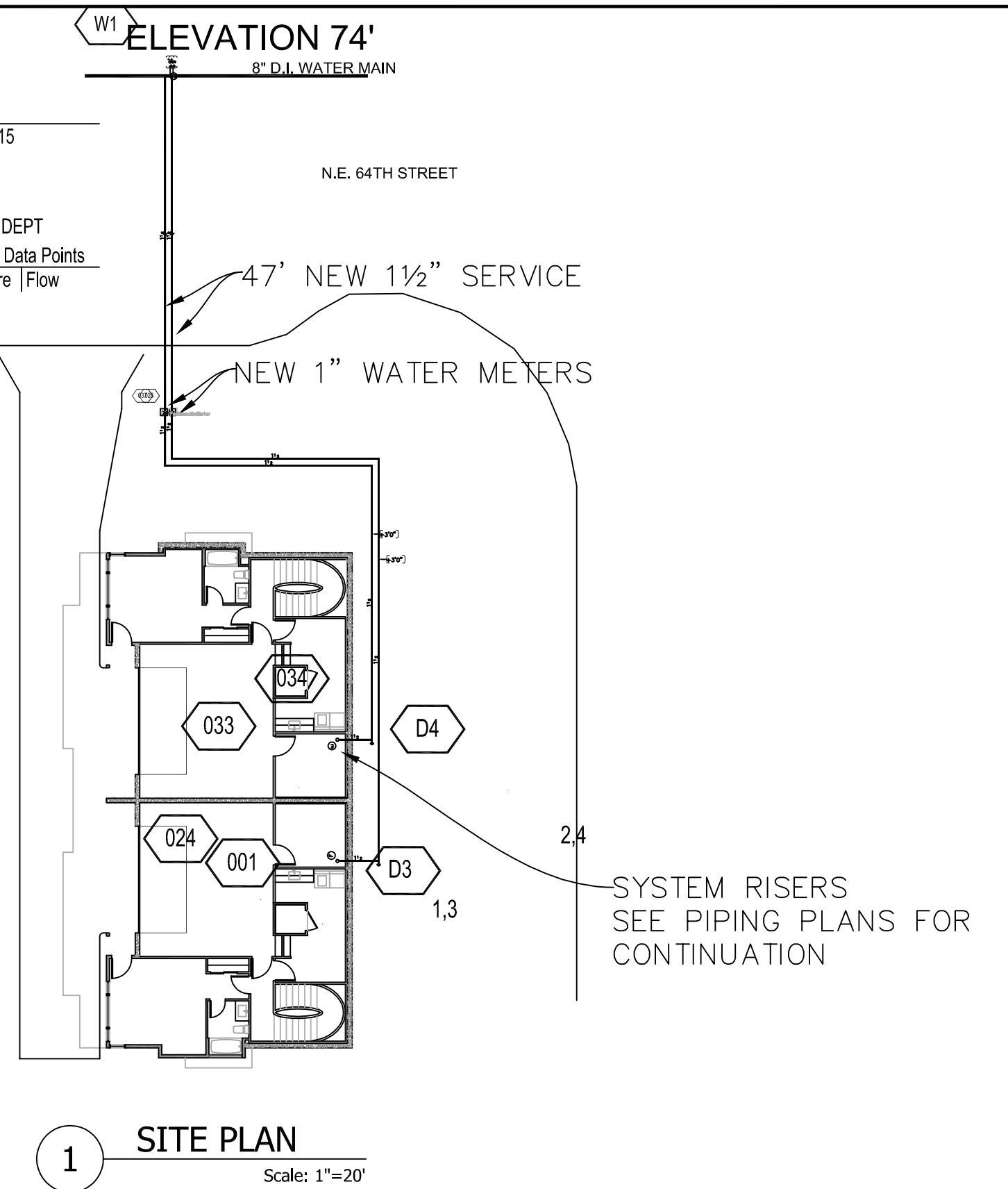


CURE TIMES WITH ONE STEP SOLVENT CEMENT 200 psi (MAXIMUM) TEST PRESSURE				
PIPE SIZE inches	Ambient Temperature During Cure Period			
	60°F to 120°F	40°F to 59°F	0°F to 39°F	
3/4"	45 min.	1.5 hr.	24 hr.	
1"	45 min.	1.5 hr.	24 hr.	
1-1/4"	1.5 hr.	18 hr.	120 hr.	
1-1/2"	1.5 hr.	18 hr.	120 hr.	
2"	6 hr.	36 hr.	See Note 1	
2-1/2"	8 hr.	72 hr.	See Note 1	
3"	8 hr.	72 hr.	See Note 1	

Note 1 For these sizes, the solvent cement can be applied at temperatures below 32°F, however, the sprinkler system temperature must be raised to a temperature of 32°F or above and allowed to cure per the above recommendations prior to pressure testing.

### RECOMMENDED PRACTICES AND PRECAUTIONS DO'S AND DON'TS

- DO'S
- READ THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
  - FOLLOW RECOMMENDED SAFE WORK PRACTICES.
  - MAKE CERTAIN THAT THE THREAD SEALANTS, GASKET LUBRICANTS, AND FIRE STOP MATERIALS ARE COMPATIBLE WITH CPVC.
  - KEEP THE PIPE AND FITTINGS IN ORIGINAL PACKAGING UNTIL NEEDED.
  - COVER PIPE AND FITTINGS WITH AN OPAQUE TARP IF STORED OUTDOORS.
  - FOLLOW PROPER HANDLING PROCEDURES.
  - USE TOOLS SPECIFICALLY DESIGNED FOR USE WITH PLASTIC PIPE AND FITTINGS.
  - USE THE PROPER SOLVENT CEMENT AND FOLLOW THE APPLICATION INSTRUCTIONS.
  - USE A DROP CLOTH TO PROTECT INTERIOR FINISHES.
  - CUT THE PIPE ENDS SQUARE.
  - DEBURR AND BEVEL THE PIPE WITH A CHAMFERING TOOL.
  - ROTATE THE PIPE 1/4 TURN WHEN BOTTOMING PIPE IN FITTING SOCKET.
  - AVOID PUDDING OF CEMENT IN FITTINGS AND PIPE.
  - MAKE CERTAIN NO SOLVENT IS ON THE SPRINKLER HEAD OR ADAPTOR THREADS.
  - MAKE CERTAIN THAT SOLVENT CEMENT DOES NOT RUN AND PLUG THE SPRINKLER HEAD ORIFICE.
  - FOLLOW THE MANUFACTURER'S RECOMMENDED CURE TIMES PRIOR TO PRESSURE TESTING.
  - USE TEFLON TAPE ON SPRINKLER HEAD THREADS AND ALL OTHER THREADED CONNECTIONS.
  - SUPPORT THE SPRINKLER HEAD PROPERLY TO PREVENT LIFT UP OF THE HEAD THROUGH THE CEILING WHEN ACTIVATED.
  - KEEP THREADED ROD WITHIN 1/16" OF THE PIPE OR USE A SURGE RESTRAINER.
  - INSTALL BLAZEMASTER CPVC PIPE IN WET SYSTEMS ONLY.
  - USE ONLY GLYCERIN AND WATER SOLUTIONS FOR FREEZE PROTECTION.
  - ALLOW FOR MOVEMENT DUE TO EXPANSION AND CONTRACTION.
- DON'TS
- DO NOT USE EDIBLE OIL/ SUCH AS CRISCO AS A GASKET LUBRICANT.
  - DO NOT USE PETROLEUM OR SOLVENT BASED SEALANTS, LUBRICANTS, OR FIRE STOP MATERIALS.
  - DO NOT USE ANY GLYCOL BASED SOLUTIONS AS AN ANTI-FREEZE.
  - DO NOT MIX GLYCERIN AND WATER SOLUTIONS IN CONTAMINATED CONTAINERS.
  - DO NOT USE SOLVENT CEMENT THAT HAS EXCEEDED IT'S SHELF LIFE OR HAS BECOME DISCOLORED OR JELLED.
  - DO NOT ALLOW SOLVENT CEMENT TO PLUG THE SPRINKLER HEAD ORIFICE.
  - DO NOT USE RIGID STYLE GROOVED COUPLINGS WITH CPVC GROOVED ADAPTORS.
  - DO NOT THREAD, GROOVE OR DRILL CPVC PIPE.
  - DO NOT USE SOLVENT CEMENT NEAR SOURCES OF HEAT, OPEN FLAME, OR WHEN SMOKING.
  - DO NOT PRESSURE TEST WITH AIR.
  - DO NOT PRESSURE TEST UNTIL THE RECOMMENDED CURE TIMES ARE MET.
  - DO NOT USE RATCHET CUTTERS WHEN THE TEMPERATURE IS BELOW 30°F.
  - DO NOT USE CPVC PIPE THAT HAS BEEN STORED OUTDOORS UNPROTECTED AND IS FADED IN COLOR.
  - DO NOT ALLOW THREADED ROD TO COME IN CONTACT WITH THE PIPE.
  - DO NOT INSTALL BLAZEMASTER IN COLD WEATHER WITHOUT ALLOWING FOR EXPANSION.
  - DO NOT INSTALL BLAZEMASTER CPVC PIPE IN DRY SYSTEMS.
  - DO NOT INSTALL IN OUTDOOR APPLICATIONS
- RENEW YOUR BLAZEMASTER INSTALLATION TRAINING EVER TWO YEARS.



### GENERAL NOTES:

- DESIGN OF SYSTEM BASED UPON REQUIREMENTS OF N.F.P.A.#13D.
- SPRINKLER PROTECTION IS NOT REQUIRED IN ATTICS, CRAWL SPACES, OPEN PORCHES, CANOPIES, DECKS, BATHROOMS LESS THAN 55 SQ.FT. WITH NONCOMBUSTIBLE FIXTURES, OR CLOSETS WITH LEAST DIMENSION LESS THAN 3 FEET, AS ALLOWED IN N.F.P.A. #13D.
- ALL EQUIPMENT TO BE NEW AND LISTED BY U.L. INSTALLED AND TESTED IN ACCORDANCE WITH N.F.P.A. #13D.
- ALL PIPING TO BE CPVC EXCEPT SYSTEM RISERS

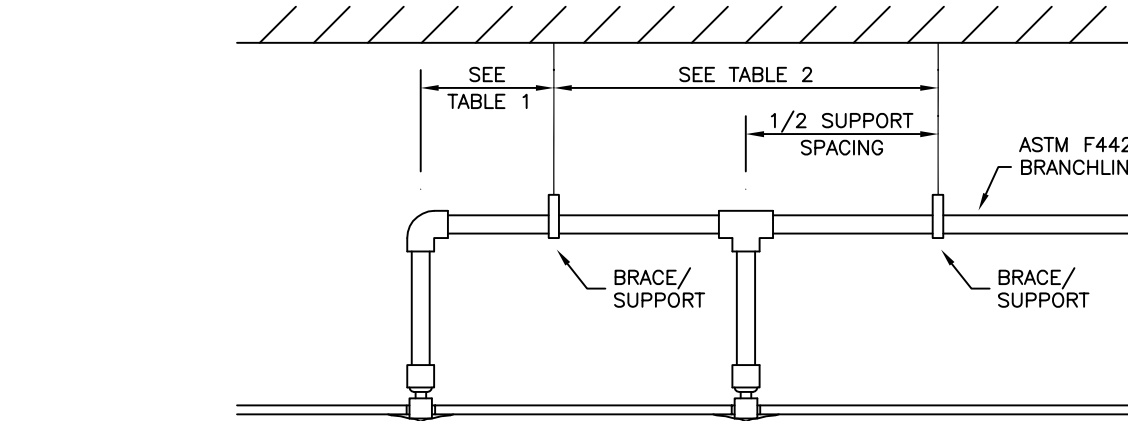
Calculation results for Design Area 1 - UPPER LEVEL SOUTH UNIT			
This system as shown on <b>BURNS FIRE PROTECTION SYSTEMS</b> company print no. _____ dated 6/26/15		at 10143 64TH STREET	
contract no. _____		is designed to discharge at a rate of 0.05 gpm/ft <sup>2</sup> (L/min/m <sup>2</sup> ) of floor area over a maximum area of 648 ft <sup>2</sup> when supplied with water at a rate of 39.2 gpm at the base of the riser.	
Hose stream allowance of _____		is included in the above.	
Occupancy classification: <b>DWELLING-13D</b>		Number of heads flowing: <b>2</b>	
Commodity classification: _____		System Type: <b>Wet</b>	
Maximum storage height: _____		Maximum velocity: <b>11.52 ft/s</b>	
Storage arrangement: _____			
Flow from In-Rack sprinklers: 0 gpm	Pressure Required at Source: 66.4 psi		
Flow from Overhead sprinklers: 34.2 gpm	Pressure Available at Source: 90.3 psi		
Flow from Inside Hoses: 5 gpm	Surplus Pressure at Source: 23.9 psi		
Flow from Outside Hoses: 0 gpm			
Other fixed flows: 0 gpm			
Total flow in system piping: 39.2 gpm			
Additional flow at/beyond source: 0 gpm			
Total of all flows: 39.2 gpm			

Calculation results for Design Area 2 - UPPER LEVEL NORTH UNIT			
This system as shown on <b>BURNS FIRE PROTECTION SYSTEMS</b> company print no. _____ dated 6/26/15		at 10143 64TH STREET	
contract no. _____		is designed to discharge at a rate of 0.05 gpm/ft <sup>2</sup> (L/min/m <sup>2</sup> ) of floor area over a maximum area of 648 ft <sup>2</sup> when supplied with water at a rate of 39.2 gpm at the base of the riser.	
Hose stream allowance of _____		is included in the above.	
Occupancy classification: <b>DWELLING-13D</b>		Number of heads flowing: <b>2</b>	
Commodity classification: _____		System Type: <b>Wet</b>	
Maximum storage height: _____		Maximum velocity: <b>11.52 ft/s</b>	
Storage arrangement: _____			
Flow from In-Rack sprinklers: 0 gpm	Pressure Required at Source: 65.7 psi		
Flow from Overhead sprinklers: 34.2 gpm	Pressure Available at Source: 90.3 psi		
Flow from Inside Hoses: 5 gpm	Surplus Pressure at Source: 24.6 psi		
Flow from Outside Hoses: 0 gpm			
Other fixed flows: 0 gpm			
Total flow in system piping: 39.2 gpm			
Additional flow at/beyond source: 0 gpm			
Total of all flows: 39.2 gpm			

Calculation results for Design Area 3 - GARAGE SOUTH			
This system as shown on <b>BURNS FIRE PROTECTION SYSTEMS</b> company print no. _____ dated 6/26/15		at 10143 64TH STREET	
contract no. _____		is designed to discharge at a rate of 0.1 gpm/ft <sup>2</sup> (L/min/m <sup>2</sup> ) of floor area over a maximum area of 640 ft <sup>2</sup> when supplied with water at a rate of 79.7 psi at the base of the riser.	
Hose stream allowance of _____		is included in the above.	
Occupancy classification: <b>GARAGE</b>		Number of heads flowing: <b>2</b>	
Commodity classification: _____		System Type: <b>Wet</b>	
Maximum storage height: _____		Maximum velocity: <b>13.86 ft/s</b>	
Storage arrangement: _____			
Flow from In-Rack sprinklers: 0 gpm	Pressure Required at Source: 79.7 psi		
Flow from Overhead sprinklers: 64.6 gpm	Pressure Available at Source: 90.2 psi		
Flow from Inside Hoses: 5 gpm	Surplus Pressure at Source: 10.5 psi		
Flow from Outside Hoses: 0 gpm			
Other fixed flows: 0 gpm			
Total flow in system piping: 69.6 gpm			
Additional flow at/beyond source: 0 gpm			
Total of all flows: 69.6 gpm			

Calculation results for Design Area 4 - GARAGE NORTH			
This system as shown on <b>BURNS FIRE PROTECTION SYSTEMS</b> company print no. _____ dated 6/26/15		at 10143 64TH STREET	
contract no. _____		is designed to discharge at a rate of 0.1 gpm/ft <sup>2</sup> (L/min/m <sup>2</sup> ) of floor area over a maximum area of 640 ft <sup>2</sup> when supplied with water at a rate of 69.6 gpm at the base of the riser.	
Hose stream allowance of _____		is included in the above.	
Occupancy classification: <b>GARAGE</b>		Number of heads flowing: <b>2</b>	
Commodity classification: _____		System Type: <b>Wet</b>	
Maximum storage height: _____		Maximum velocity: <b>13.87 ft/s</b>	
Storage arrangement: _____			
Flow from In-Rack sprinklers: 0 gpm	Pressure Required at Source: 77.8 psi		
Flow from Overhead sprinklers: 64.6 gpm	Pressure Available at Source: 90.2 psi		
Flow from Inside Hoses: 5 gpm	Surplus Pressure at Source: 12.5 psi		
Flow from Outside Hoses: 0 gpm			
Other fixed flows: 0 gpm			
Total flow in system piping: 69.6 gpm			
Additional flow at/beyond source: 0 gpm			
Total of all flows: 69.6 gpm			

CERT.#66528  
David Yates C.E.T.  
N.I.C.E.T. Level IV  
FIRE PROTECTION  
ENGINEERING TECHNOLOGY  
WATER-BASED SYSTEMS LABOUR  
NATIONAL INSTITUTE FOR  
CERTIFICATION IN ENGINEERING  
TECHNOLOGIES

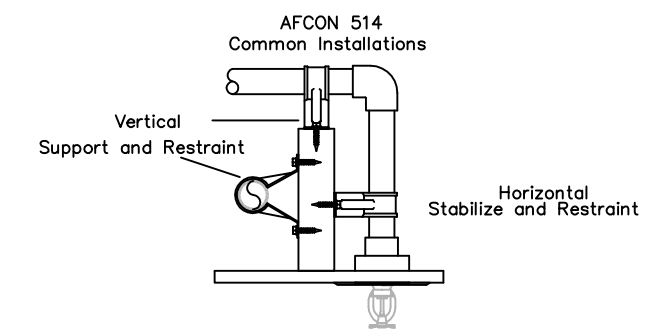


SUPPORT SPACING "L"(1) CPVC SDR 13.5 (SOURCE = CENTRAL SPRINKLER TABLE 1)							
TEMP °F	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
73°	5-1/2	6	6-1/2	7	8	9	10

NOTE: FOR EXPOSED INSTALLATIONS, LISTED SUPPORT DEVICES SHALL BE USED WHICH MOUNT THE PIPING DIRECTLY TO THE CEILING OR SIDE WALL.

SUPPORT SPACING DISTANCE CPVC SDR 13.5 TO AN IN LINE SPRINKLER HEAD DROP TEE (SOURCE = CENTRAL SPRINKLER TABLE M)							
PIPE SIZE inches	SYSTEM PRESSURE		SYSTEM PRESSURE				
	< 100 psi	> 100 psi	< 100 psi	> 100 psi			
3/4"	6"	6"	4"	3"			
1"	12"	9"	5"	4"			
1-1/4"	18"	12"	6"	5"			
1-1/2"-3"	24"	12"	7"	7"			

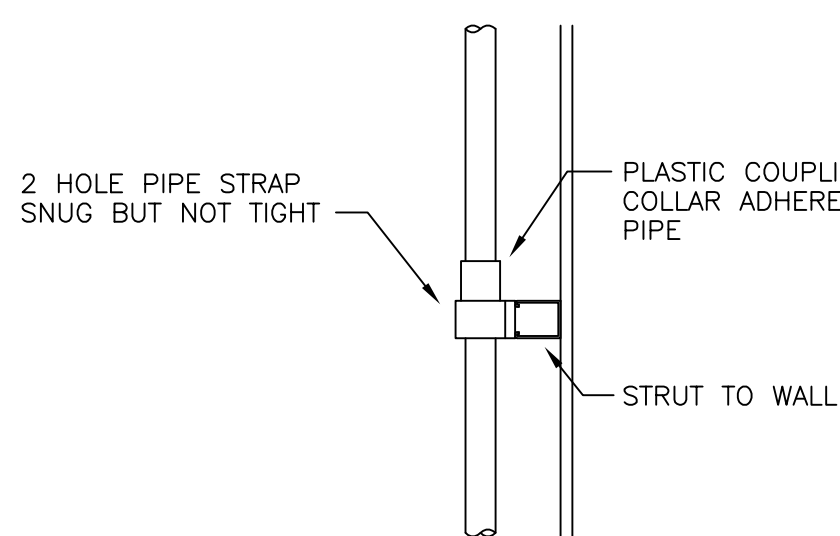
NOTE: BRANCH LINES SHALL BE BRACED AT A DISTANCE FROM A TEE OR ELBOW TO PREVENT LIFT OF SPRINKLERS AS SHOWN IN TABLES



SUPPORT SPACING DISTANCE CPVC SDR 13.5 TO AN END LINE SPRINKLER HEAD DROP ELBOW (SOURCE = CENTRAL SPRINKLER TABLE N)							
PIPE SIZE inches	SYSTEM PRESSURE		SYSTEM PRESSURE				
	< 100 psi	> 100 psi	< 100 psi	> 100 psi			
3/4"	4"	3"	3/4"	6"			
1"	5"	4"	1"	10"			
1-1/4"	6"	5"	1-1/4"	14"			
1-1/2"	7"	7"	1-1/2"	2"			
2-1/2"-3"	7"	7"	2-1/2"	2"			

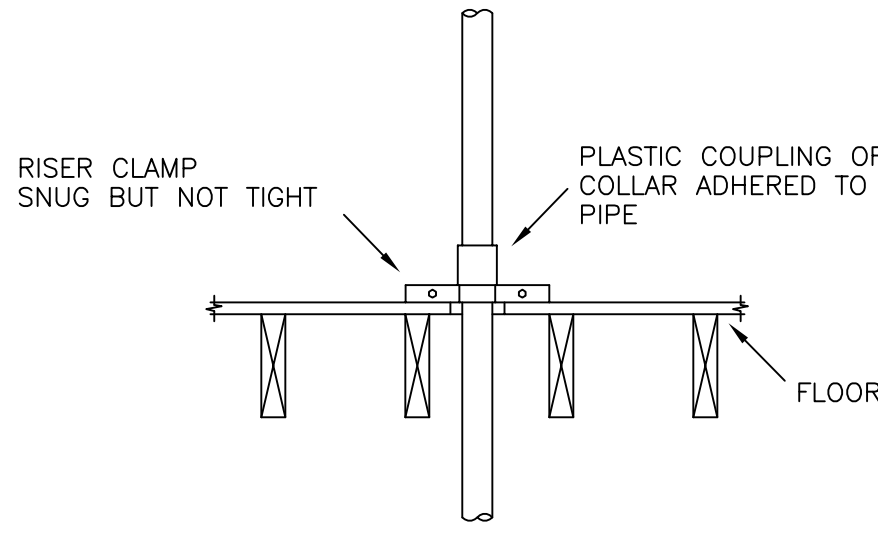
NOTE: BRANCH LINES SHALL BE BRACED AT A DISTANCE FROM A TEE OR ELBOW TO PREVENT LIFT OF SPRINKLERS AS SHOWN IN TABLES

### VERTICAL SUPPORT OF BLAZEMASTER 2000 PIPE AT MID FLOOR LOCATION



VERTICAL PIPING SHALL BE SUPPORTED AT EACH FLOOR LEVEL OR AT 10 FOOT INTERVALS, WHICHEVER IS LESS.

### VERTICAL SUPPORT OF BLAZEMASTER 2000 PIPE AT FLOOR PENETRATION

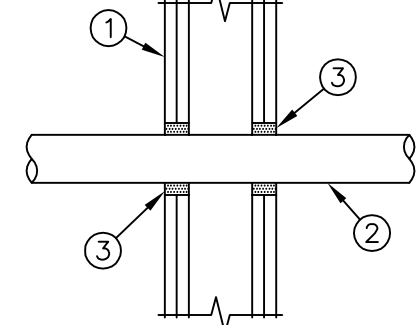


VERTICAL PIPING SHALL BE SUPPORTED AT EACH FLOOR LEVEL OR AT 10 FOOT INTERVALS, WHICHEVER IS LESS.

### CPVC RISER SUPPORT NOTES

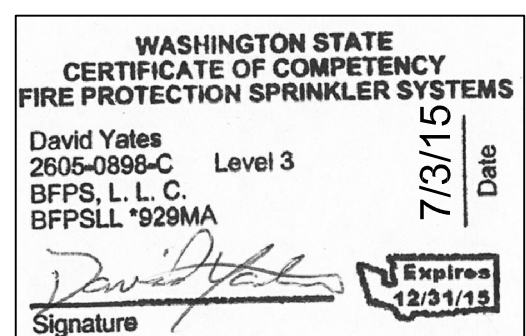
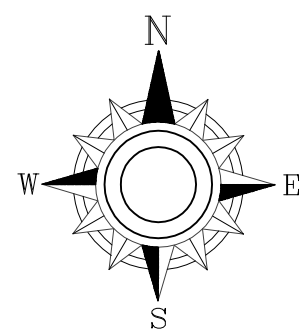
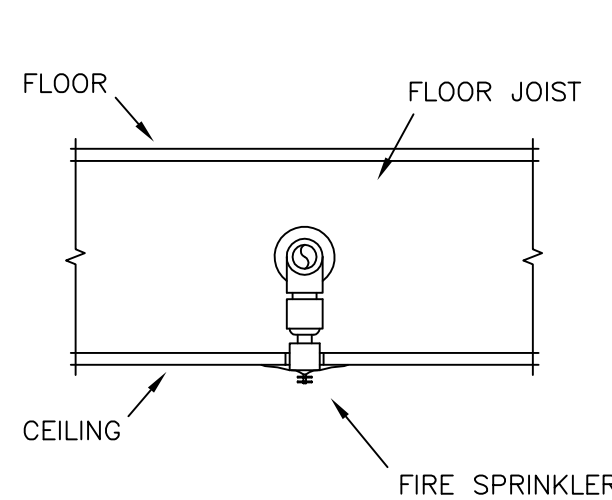
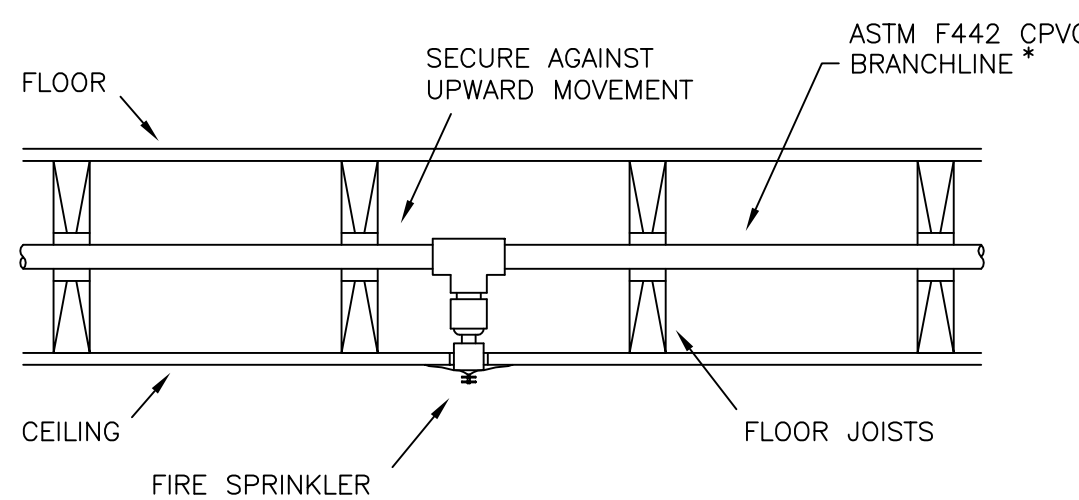
RISERS SHALL BE SUPPORTED BY PIPE CLAMPS OR BY HANGERS LOCATED ON THE HORIZONTAL CONNECTION CLOSE TO THE RISER. ONLY LISTED HANGERS AND CLAMPS SHALL BE USED. VERTICAL LINES MUST BE SUPPORTED AT INTERVALS TO AVOID PLACING EXCESSIVE LOAD ON ANY FITTING AT THE LOWER END OF THE RISER. VERTICAL PIPING SHALL BE SUPPORTED AT EACH FLOOR OR AT 10' INTERVALS, WHICHEVER IS LESS. SUPPORT CAN BE ACHIEVED BY USING RISER CLAMPS OR DOUBLE BOLT PIPE CLAMPS LISTED FOR THIS SERVICE. DO NOT USE RISER CLAMPS WHICH SQUEEZE THE PIPE OR DEPEND ON COMPRESSION FOR SUPPORT. HANGERS AND STRAPS SHALL NOT COMPRESS, DISTORT, CUT OR ABRASE THE PIPING AND SHALL ALLOW FOR FREE MOVEMENT OF THE PIPE TO COMPENSATE FOR THERMAL EXPANSION AND CONTRACTION OF CPVC PIPE AND FITTINGS.

F-RATING = 1 AND 2 HOUR  
T-RATING = 2 HOUR



### SECTION A-A

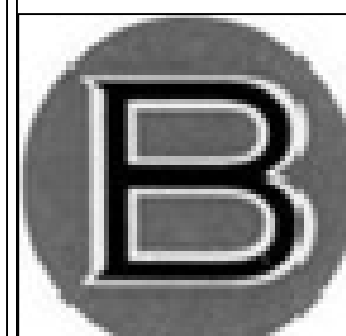
- 1 Pre-Rated Gypsum Wallboard/Stud Assembly
- 2 Plastic Pipe - Nominal 2" diameter (or smaller) CPVC pipe for use in closed piping systems. The annular space shall be min. 1/4" to max. 1-3/8" within the fire stop system
- 3 BLAZEMASTER CAULK & WALK® - Min 1/2" thickness of sealant applied within opening. Additional sealant to be installed such that a min. 1/4" crown is formed around the penetrating item.



REVISIONS		
DATE	DESCRIPTION	BY

SPRINKLER SYMBOLS									
SYM	INT	POSITION	FINISH	TEMP	K	NPT	SN	NFG	MODEL#
10	PEND	WHITE	155	4.90	1/2"	CSO	CENTRAL	LF II	
12	PEND	WHITE	155	4.20	1/2"	TY3334	TYCO	LF I	
6	SIDE	CHROME	155	5.60	1"	TY3335	TYCO	DSI QR	
4	PEND	CHROME	175	5.60	1/2"	TY3231	TYco	TY-FRB	
4	SIDE	CHROME	155	5.60	1"	TY3338	TYCO	DSIC	

76 TOTAL HEADS



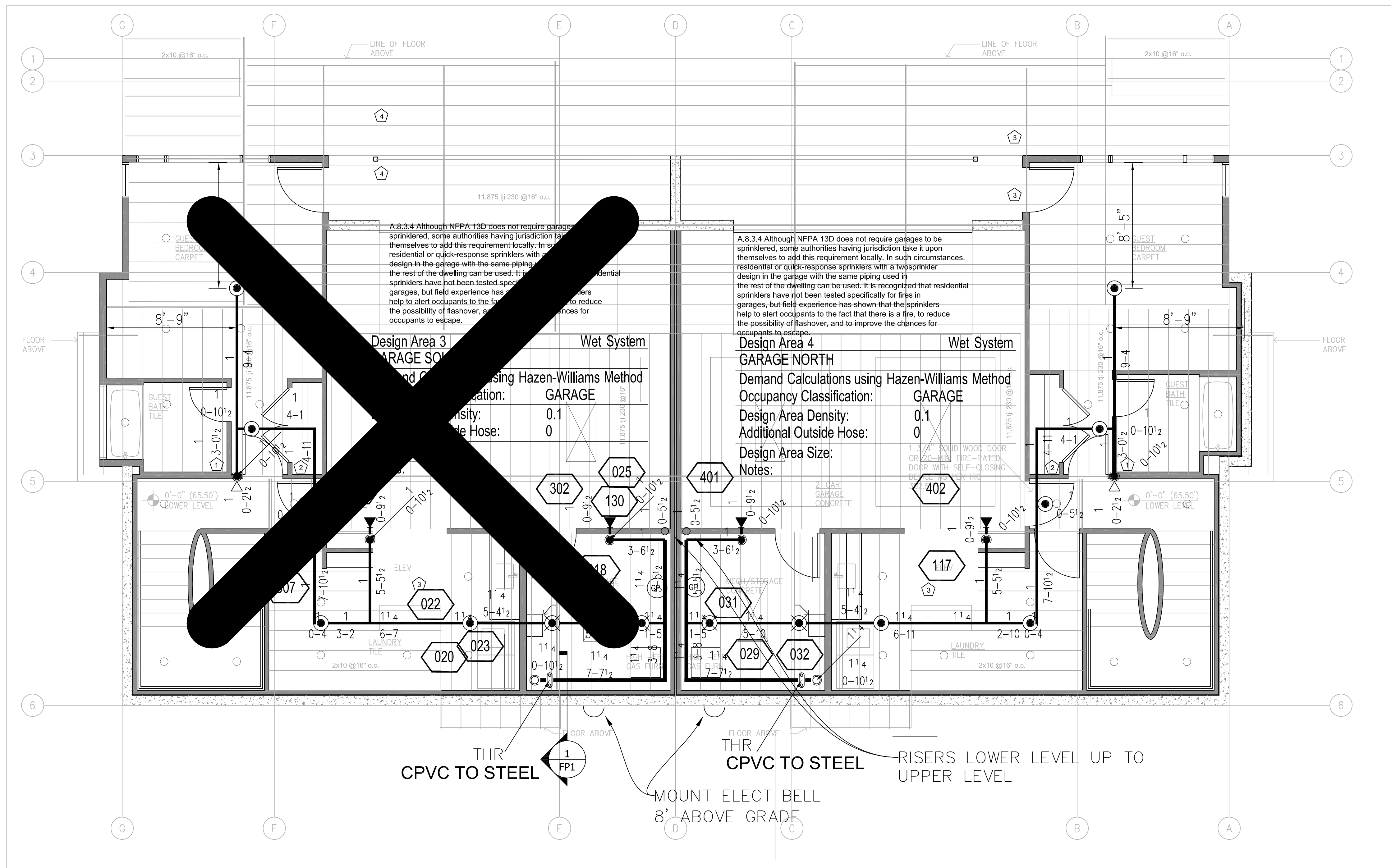
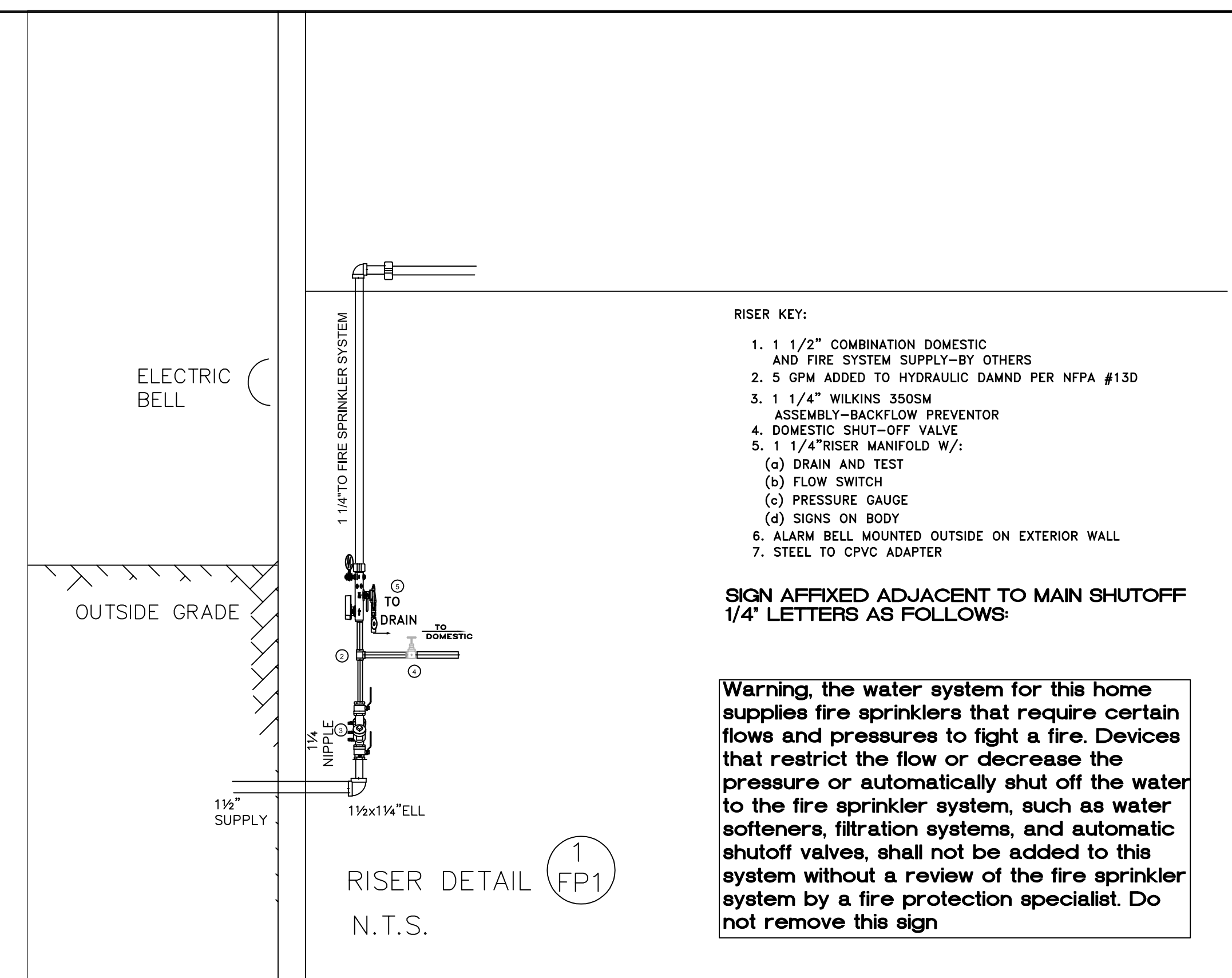
BURNS FIRE PROTECTION SYSTEMS  
P.O.B. 1110  
GRANITE FALLS, WA  
425-388-0124  
DESIGN QUESTIONS 360-591-5396

KIRKLAND TOWNHOMES  
10143 NE 64TH ST  
KIRKLAND, WA  
North Unit - A

&lt;

8.3.1 Sprinklers shall be installed in all areas except where omission is permitted by 8.3.2 through 8.3.8.

- 8.3.6 Sprinklers shall not be required in covered, unheated projections of the building at entrances/exits as long as the dwelling unit has another means of egress.
- 8.3.7 Sprinklers shall not be required for ceiling pockets that meet the following conditions:
- (1) The total volume of all unprotected ceiling pockets in a compartment does not exceed 100 ft<sup>3</sup> (2.83 m<sup>3</sup>).
  - (2) The entire floor under the unprotected ceiling pocket is protected by the sprinklers at the lower ceiling elevation.
  - (3)\*The interior finish of the unprotected ceiling pocket excluding decorative treatments is noncombustible or limited-combustible material.
  - (4) Skylights not exceeding 32 ft<sup>2</sup> (2.97 m<sup>2</sup>) shall be permitted to have a plastic cover.
- 8.3.8 Sprinklers shall not be required in closets in garages and exterior closets (regardless of size) located on exterior balconies, exterior breezeways/corridors, or accessed from outdoors where the closet does not have doors or unprotected penetrations directly into the dwelling unit.



ALL PIPING TO RUN IN JOIST SPACE  
6" ABOVE CEILING U.N.O.

## Must Remain On Site

NOTE: SPRINKLERS NEAR ISOLATED NON-CONTINUOUS OBSTRUCTIONS TO BE LOCATED IN ACCORDANCE WITH NFPA #13 8.10.6.2.1.3\* Unless the requirements of 8.10.6.2.1.4 through 8.10.6.2.1.8 are met, sprinklers shall be positioned away from obstructions a minimum distance of four times the maximum dimension of the obstruction (e.g., truss webs and chords, pipe, columns, and fixtures). The maximum clear distance required shall be 36 in. (914 mm) in accordance with Figure 8.10.6.2.1.3.

TABLE B.6.5.1.2

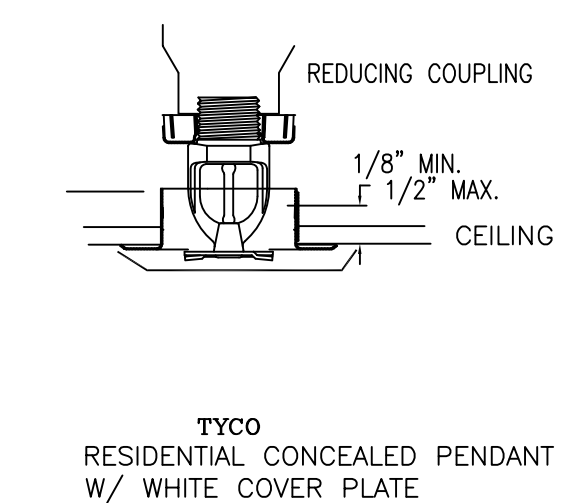
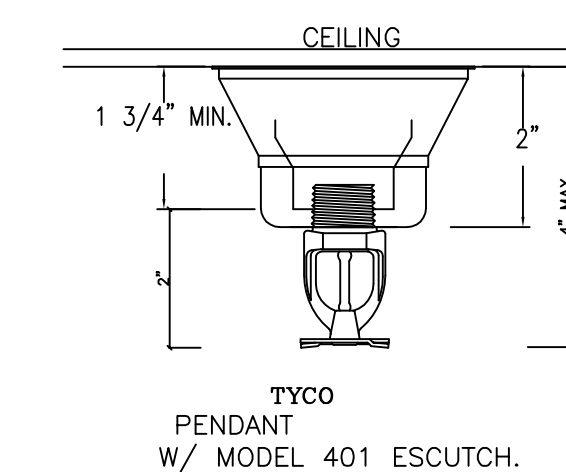
DISTANCE FROM SPRINKLERS TO SIDE OF OBSTRUCTION (A'')	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (C'')
LESS THAN 1'-0"	0'
1'-0" TO LESS THAN 1'-6"	2 1/2'
1'-6" TO LESS THAN 2'-0"	3 1/2'
2'-0" TO LESS THAN 2'-6"	5 1/2'
2'-6" TO LESS THAN 3'-0"	7 1/2'
3'-0" TO LESS THAN 3'-6"	8 1/2'
3'-6" TO LESS THAN 4'-0"	10'
4'-0" TO LESS THAN 4'-6"	14'
4'-6" TO LESS THAN 5'-0"	16 1/2'
5'-0" AND GREATER	18'

**Obstruction Detail Standard Head**

NO SCALE

**TABLE 8.6.5.1**

MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (STANDARD HEADS)	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (PTP-C HEADS)
1" LESS THAN 1'-0"	0"
1'-0" TO LESS THAN 1'-6"	0 1/2"
1'-6" TO LESS THAN 2'-0"	3/4"
2'-0" TO LESS THAN 2'-6"	9/16"
2'-6" TO LESS THAN 3'-0"	7/8"
3'-0" TO LESS THAN 3'-6"	3"
3'-6" TO LESS THAN 4'-0"	3 1/2"
4'-0" TO LESS THAN 4'-6"	4"
4'-6" TO LESS THAN 5'-0"	12"
5'-0" TO LESS THAN 5'-6"	14"
5'-6" TO LESS THAN 6'-0"	16"
6'-0" TO LESS THAN 6'-6"	18"
6'-6" TO LESS THAN 7'-0"	20"
7'-0" TO LESS THAN 7'-6"	18"
7'-6" TO LESS THAN 8'-0"	N/A
8'-0" TO LESS THAN 8'-6"	N/A
8'-6" TO LESS THAN 9'-0"	14"
9'-0" TO LESS THAN 9'-6"	16"
9'-6" TO LESS THAN 10'-0"	18"
10'-0" TO LESS THAN 10'-6"	21"

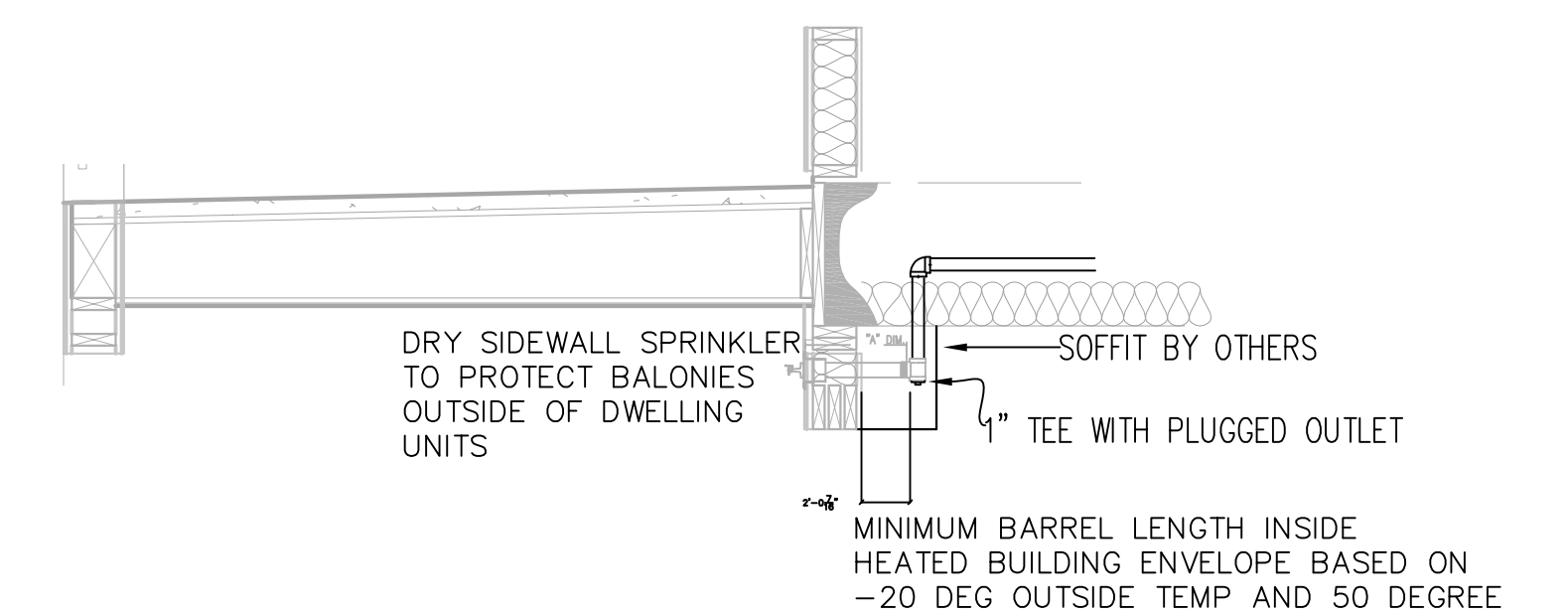


NOTES:

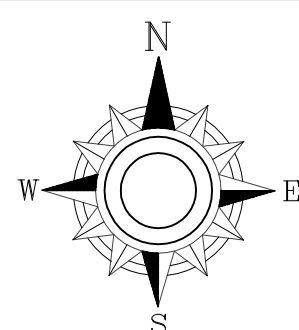
1. PENDANT SPRINKLERS INSTALLED IN CEILINGS TO CONCEALED WITH WHITE COVER PLATE

(A) SPRINKLERS NEAR OBSTRUCTIONS TO BE INSTALLED WITH ESCUTCHEONS TO ALLOW DEFLECTORS TO BE LOCATED TO MEET REQUIREMENTS OF NFPA 13 4.3.5D TO AVOID SURFACE MOUNT OBSTRUCTIONS.

(B) SPRINKLERS ARE RESIDENTIAL PENDANT SPRINKLERS WITH NOMINAL 1" ORIFICE EXCEPT STANDARD SPRAY Q-R HEADS IN MECHANICAL ROOMS, EXTENDED COVERAGE 4" SIDEWALL HEADS IN GARAGES, AND 4" SIDEWALL HEADS FOR PORCHES AND DECKS REQUIRING PROTECTION PER IFC AND IBC.








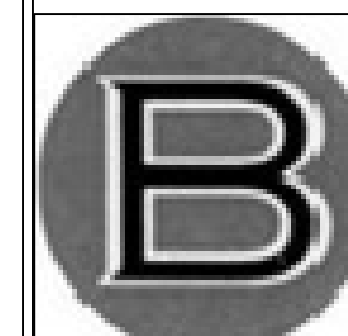
11 TYPICAL INSTALLATION DRY HEADS AT DECKS  
SCALE: NONE



<p align="center"><b>WASHINGTON STATE</b>  <b>CERTIFICATE OF COMPETENCY</b>  <b>FIRE PROTECTION SPRINKLER SYSTEMS</b></p>	
<p>David Yates          2605-0898-C          BFPS, L.L.C.          BFPSLL *929MA</p>	<p align="center">Level 3</p>
<p><i>David Yates</i></p>	<p align="center">7/31/15</p>
<p>Signature</p>	<p>Date</p>

[illegible]

SPRINKLER SYMBOLS										
SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	CENTRAL	MODEL#
	60	PEND	WHITE	155	4.90	1/2"	CSC			LF II
	2	SIDE	WHITE	155	4.20	1/2"	TY1334	TYCO		LFII
	6	SIDE	CHROME	155	5.60	1"	TY1335	TYCO		D51 GR
	4	PEND	CHROME	175	5.60	1/2"	TY13231	TYCO		TY-FRB
	4	SIDE	CHROME	155	5.60	1"	TY1336	TYCO		D51EC



BURNS FIRE PROTECTION SYSTEMS  
P.O.B. 1110  
GRANITE FALLS, WA  
425-388-0124  
DESIGN QUESTIONS 360-591-5396

KIRKLAND TOWNHOMES  
10143 NE 64TH ST  
KIRKLAND, WA

CONTRACTOR:

North Unit - A



LOWER LEVE	
LOWER LEVEL	
PERMIT NO.	PIPING
CONTRACT NO.	
APPROVAL	CITY OF KIRKLAND
DRAWN BY	D.YATES
SCALE	NOTED
DATE	7/3/15
DESIGNED	EP 2

8.3 Location of Sprinklers.

8.3.1 Sprinklers shall be installed in all areas except where omission is permitted by 8.3.2 through 8.3.8.

8.3.2 Sprinklers shall not be required in bathrooms of 55 ft<sup>2</sup> (5.1 m<sup>2</sup>) and less.

8.3.3 Sprinklers shall not be required in clothes closets, linen closets, and pantries that meet all of the following conditions:

- (1) The area of the space does not exceed 24 ft<sup>2</sup> (2.2 m<sup>2</sup>).
- (2) The shortest dimension does not exceed 3 ft (0.9 m).
- (3) The walls and ceilings are surfaced with noncombustible or limited-combustible materials as defined in NFPA 220.

8.3.4\* Sprinklers shall not be required in garages, open attached porches, carports, and similar structures.

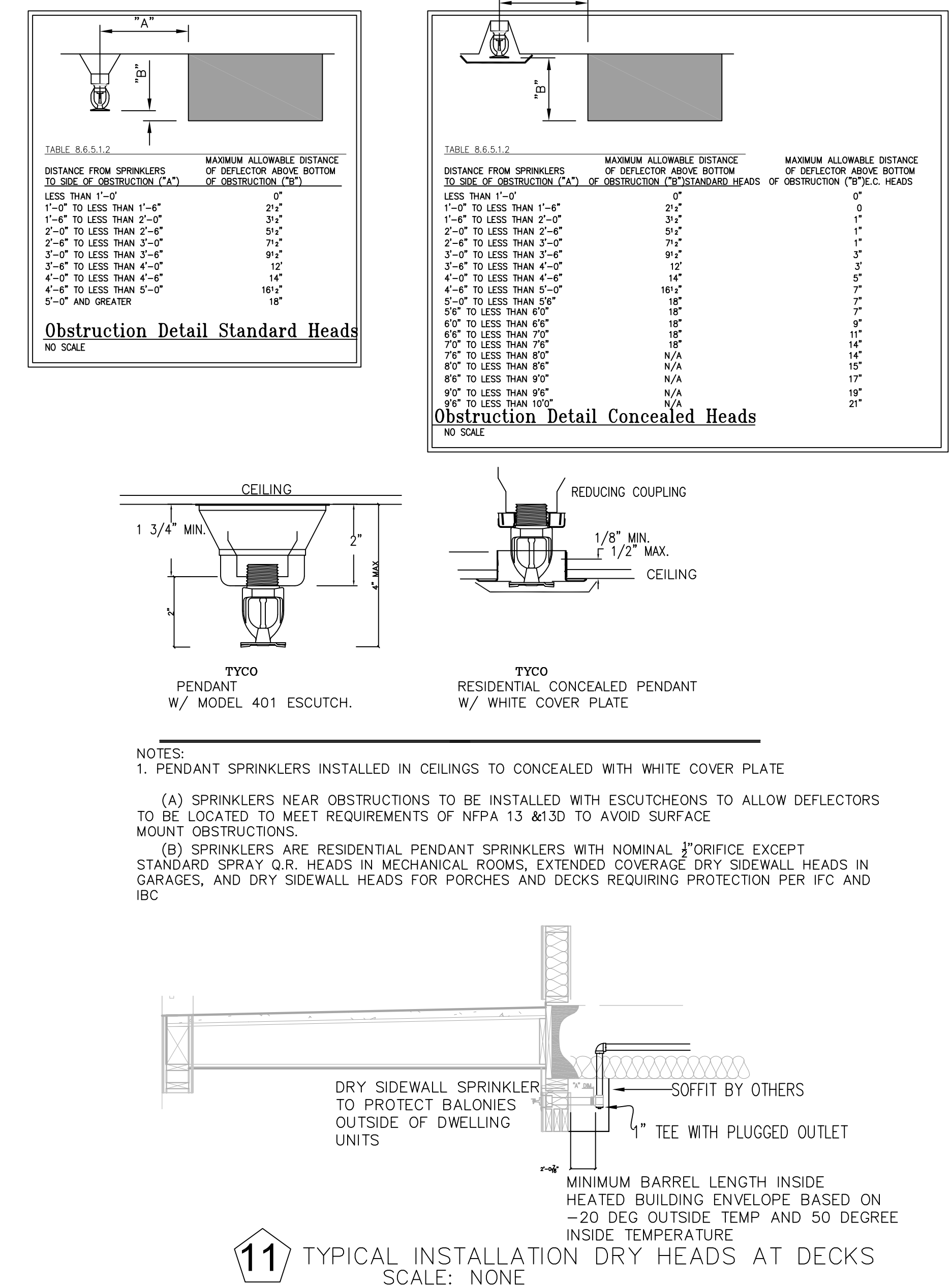
8.3.5 Sprinklers shall not be required in attics with or without storage, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, floor/ceiling spaces, elevator shafts, crawl spaces, and other concealed spaces that are not used or intended for living purposes.

8.3.6 Sprinklers shall not be required in covered, unheated projections of the building at entrances/exits as long as the dwelling unit has another means of egress.

8.3.7 Sprinklers shall not be required for ceiling pockets that meet the following conditions:

- (1) The total volume of all unprotected ceiling pockets in a compartment does not exceed 100 ft<sup>3</sup> (2.83 m<sup>3</sup>).
- (2) The entire floor under the unprotected ceiling pocket is protected by the sprinklers at the lower ceiling elevation.
- (3)\*The interior finish of the unprotected ceiling pocket excluding decorative treatments is noncombustible or limited-combustible material.
- (4) Skylights not exceeding 32 ft<sup>2</sup> (2.97 m<sup>2</sup>) shall be permitted to have a plastic cover.

8.3.8 Sprinklers shall not be required in closets in garages and exterior closets (regardless of size) located on exterior balconies, exterior breezeways/corridors, or accessed from outdoors where the closet does not have doors or unprotected penetrations directly into the dwelling unit.



Must Remain On Site

- 8.3 Location of Sprinklers.
- 8.3.1 Sprinklers shall be installed in all areas except where omission is permitted by 8.3.2 through 8.3.8.
- 8.3.2 Sprinklers shall not be required in bathrooms of 55 ft<sup>2</sup> (5.1 m<sup>2</sup>) and less.
- 8.3.3 Sprinklers shall not be required in clothes closets, linen closets, and pantries that meet all of the following conditions:
- (1) The area of the space does not exceed 24 ft<sup>2</sup> (2.2 m<sup>2</sup>).
  - (2) The shortest dimension does not exceed 3 ft (0.9 m).
  - (3) The walls and ceilings are surfaced with noncombustible or limited-combustible materials as defined in NFPA 220.
- 8.3.4\* Sprinklers shall not be required in garages, open attached porches, carports, and similar structures.
- 8.3.5 Sprinklers shall not be required in attics with or without storage, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, floor/ceiling spaces, elevator shafts, crawl spaces, and other concealed spaces that are not used or intended for living purposes.
- 8.3.6 Sprinklers shall not be required in covered, unheated projections of the building at entrances/exits as long as the dwelling unit has another means of egress.
- 8.3.7 Sprinklers shall not be required for ceiling pockets that meet the following conditions:
- (1) The total volume of all unprotected ceiling pockets in a compartment does not exceed 100 ft<sup>3</sup> (2.83 m<sup>3</sup>).
  - (2) The entire floor under the unprotected ceiling pocket is protected by the sprinklers at the lower ceiling elevation.
  - (3)\*The interior finish of the unprotected ceiling pocket excluding decorative treatments is noncombustible or limited-combustible material.
  - (4) Skylights not exceeding 32 ft<sup>2</sup> (2.97 m<sup>2</sup>) shall be permitted to have a plastic cover.
- 8.3.8 Sprinklers shall not be required in closets in garages and exterior closets (regardless of size) located on exterior balconies, exterior breezeways/corridors, or accessed from outdoors where the closet does not have doors or unprotected penetrations directly into the dwelling unit.

NOTE: SPRINKLERS NEAR ISOLATED NON-CONTINUOUS OBSTRUCTIONS TO BE LOCATED IN ACCORDANCE WITH NFPA #13 8.10.6.2.1.3\* Unless the requirements of 8.10.6.2.1.4 through 8.10.6.2.1.8 are met, sprinklers shall be positioned away from obstructions a minimum distance of four times the maximum dimension of the obstruction (e.g., truss webs and chords, pipe, columns, and fixtures). The maximum clear distance required shall be 36 in. (914 mm) in accordance with Figure 8.10.6.2.1.3.

TABLE 8.6.5.1.2

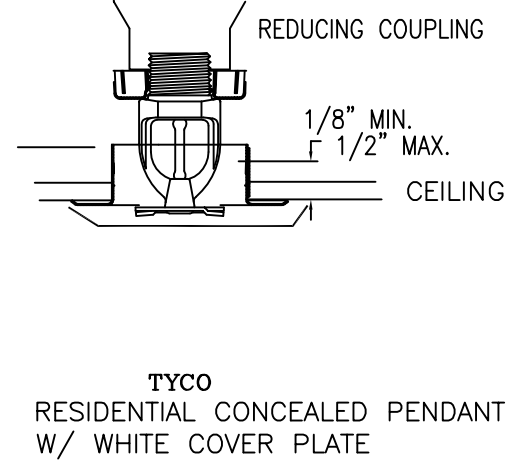
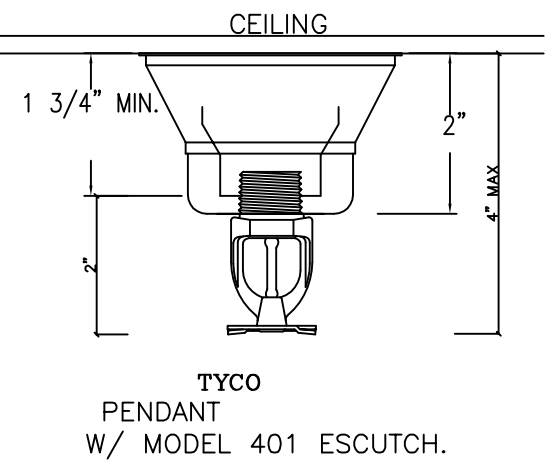
DISTANCE FROM SPRINKLERS TO SIDE OF OBSTRUCTION (A")	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (B")
LESS THAN 1'-0"	0"
1'-0" TO LESS THAN 1'-6"	2 1/2"
1'-6" TO LESS THAN 2'-0"	3 1/2"
2'-0" TO LESS THAN 2'-6"	5 1/2"
2'-6" TO LESS THAN 3'-0"	7 1/2"
3'-0" TO LESS THAN 3'-6"	9 1/2"
3'-6" TO LESS THAN 4'-0"	12"
4'-0" TO LESS THAN 4'-6"	14"
4'-6" TO LESS THAN 5'-0"	16"
5'-0" AND GREATER	18"

Obstruction Detail Standard Heads  
NO SCALE

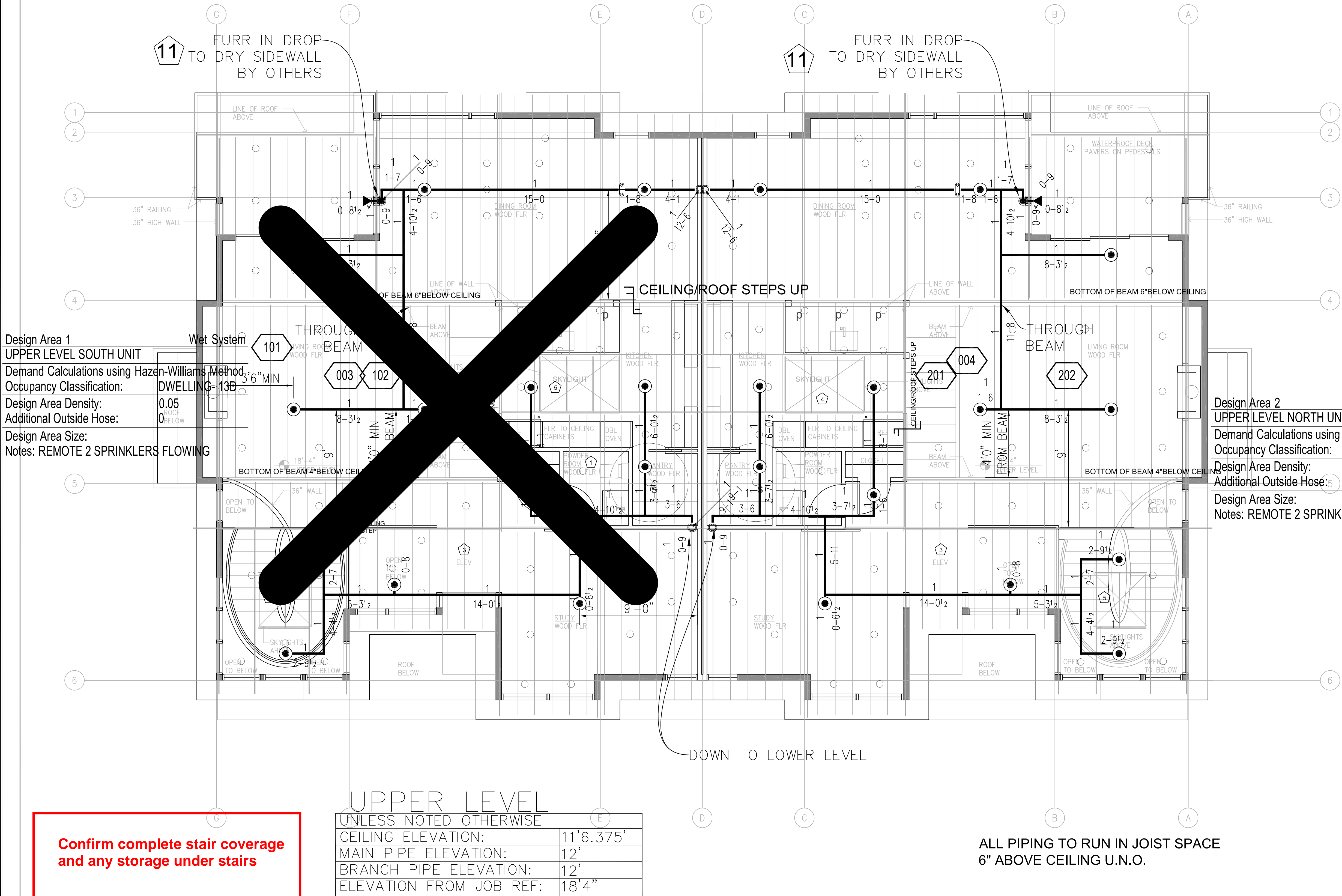
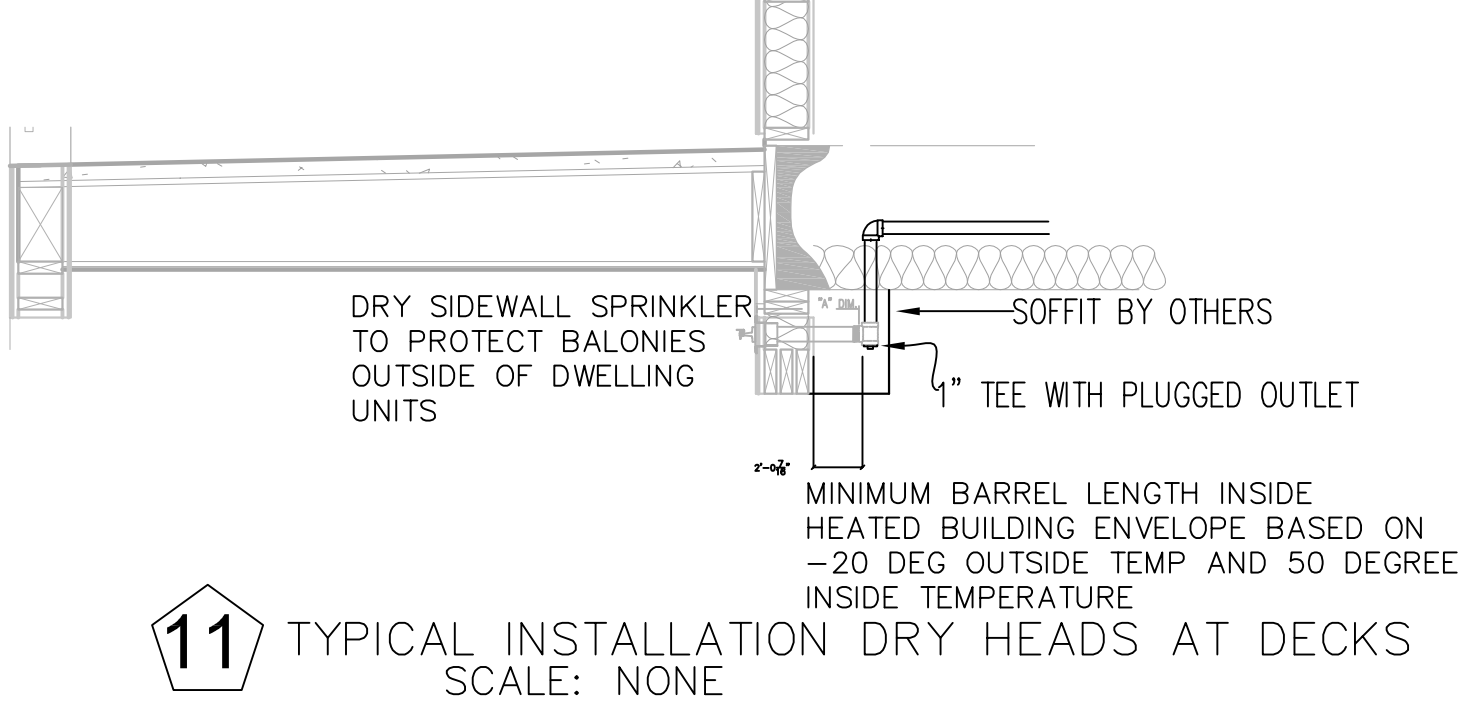
TABLE 8.6.5.1.2

DISTANCE FROM SPRINKLERS TO SIDE OF OBSTRUCTION (A")	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (B")	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (C")
LESS THAN 1'-0"	0"	0"
1'-0" TO LESS THAN 1'-6"	2 1/2"	9"
1'-6" TO LESS THAN 2'-0"	3 1/2"	11"
2'-0" TO LESS THAN 2'-6"	5 1/2"	13"
2'-6" TO LESS THAN 3'-0"	7 1/2"	15"
3'-0" TO LESS THAN 3'-6"	9 1/2"	17"
3'-6" TO LESS THAN 4'-0"	12"	19"
4'-0" TO LESS THAN 4'-6"	14"	21"
4'-6" TO LESS THAN 5'-0"	16"	23"
5'-0" TO LESS THAN 5'-6"	18"	25"
5'-6" TO LESS THAN 6'-0"	18"	27"
6'-0" TO LESS THAN 6'-6"	18"	29"
6'-6" TO LESS THAN 7'-0"	18"	31"
7'-0" TO LESS THAN 7'-6"	N/A	33"
7'-6" TO LESS THAN 8'-0"	N/A	35"
8'-0" TO LESS THAN 8'-6"	N/A	37"
8'-6" TO LESS THAN 9'-0"	N/A	39"
9'-0" TO LESS THAN 9'-6"	N/A	41"
9'-6" TO LESS THAN 10'-0"	N/A	43"

Obstruction Detail Concealed Heads  
NO SCALE



- NOTES:
1. PENDANT SPRINKLERS INSTALLED IN CEILINGS TO CONCEALED WITH WHITE COVER PLATE
  - (A) SPRINKLERS NEAR OBSTRUCTIONS TO BE INSTALLED WITH ESCUTCHEONS TO ALLOW DEFLECTORS TO BE LOCATED TO MEET REQUIREMENTS OF NFPA 13 & 13D TO AVOID SURFACE MOUNT OBSTRUCTIONS.
  - (B) SPRINKLERS ARE RESIDENTIAL PENDANT SPRINKLERS WITH NOMINAL 3" ORIFICE EXCEPT STANDARD SPRAY Q.R. HEADS IN MECHANICAL ROOMS, EXTENDED COVERAGE DRY SIDEWALL HEADS IN GARAGES, AND DRY SIDEWALL HEADS FOR PORCHES AND DECKS REQUIRING PROTECTION PER IFC AND IBC



Design Area 2 Wet System

UPPER LEVEL NORTH UNIT

Demand Calculations using Hazen-Williams Method

Occupancy Classification: DWELLING- 13D

Design Area Density: 0.05

Additional Outside Hose: 0

Design Area Size:

Notes: REMOTE 2 SPRINKLERS FLOWING



BURNS FIRE PROTECTION SYSTEMS

P.O.B. 1110

GRANITE FALLS, WA

425-388-0124

DESIGN QUESTIONS 360-591-5396

KIRKLAND TOWNHOMES

10143 NE 64TH ST

KIRKLAND, WA

North Unit - A

UPPER LEVEL PIPING

PERMIT NO.

CONTRACT NO.

APPROVAL CITY OF KIRKLAND

DRAWN BY D.YATES

SCALE NOTED

DATE 7/3/15

REVISED

PLOTTED

FP 4